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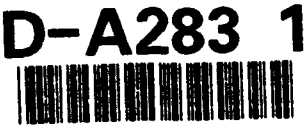

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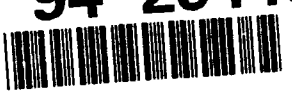

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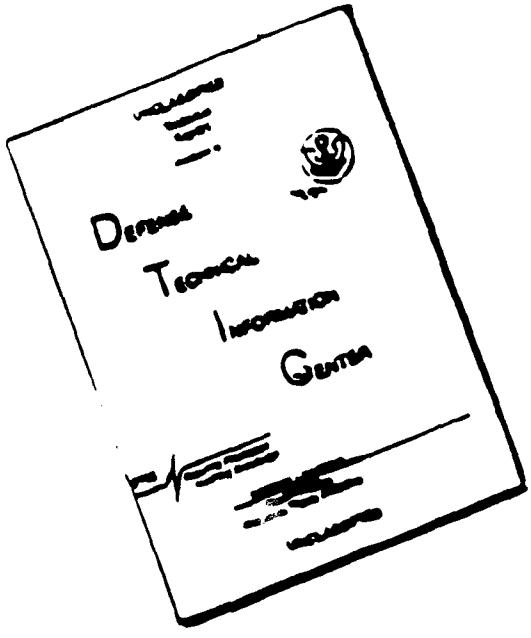

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EFFECT OF THE BRAZILIAN ARMS INDUSTRY ON U.S. STRATEGY

by

Steven D. Kahne
Lieutenant Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE CURRICULUM

REQUIREMENT

Advisor: Dr. David S. Sorenson

MAXWELL AIR FORCE BASE, ALABAMA

May 1993

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ABSTRACT

TITLE: Effect of the Brazilian Arms Industry on U.S. Strategy

AUTHOR: Steven D. Kahne, Lieutenant Colonel, USAF

Brazil's arms manufacturing capability has made great strides in the international market in the past 25 years. Thus far, the U.S. has only taken action to try and limit Brazil and their actions regarding their arms exports. This was done once because of human rights violations called out by the Carter Administration and once because of sales made by Brazilian defense firms to destabilizing countries such as Iraq, Libya, and Iran. The U.S. should see the Brazilian arms industry as an opportunity in the western hemisphere. Cooperation between the U.S. and Brazilian industries could provide a sharing of overhead costs and technologies. This could reduce overall unit prices for the two countries' major weapon systems and help promote greater hemispheric stability. Brazil has announced they are open to this. It is up to the U.S. to seize the opportunity.

BIOGRAPHICAL SKETCH

Lieutenant Colonel Steven D. Kahne (M.S., International Logistics, Air Force Institute of Technology) has been involved in major weapon system acquisitions for 13 years. The majority of that time has been spent in international programs. The international programs he has worked with have been the F-16 program, Peace Hawk (support of Saudi Arabian F-5 aircraft), the NATO AWACS, contracting depot level maintenance for U.S. aircraft based in Europe, and a variety of smaller programs. He has served in Air Force Systems Command, Air Force Logistics Command, Defense Logistics Agency, and NATO when he was involved with these programs. He is a graduate of Air Command and Staff College (in residence) and of the Air War College, class of 1993.

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INTRODUCTION

The ability of newly industrialized nations to develop arms manufacturing capabilities has presented a policy challenge to the U.S. the past two decades. Policy makers and thinkers are on both sides of the issue as to whether or not third world arms production capability is stabilizing or destabilizing. Some believe the U.S. could use this capability in such a way to exert influence over a particular country, and thereby improve stability for a given region.. Others believe proliferation of arms production leads to a greater arms race in the third world. On this issue, the U.S. has not expressed a clear policy.[1]

This paper explores one third world country's development of arms manufacturers. Brazil, as a newly developing nation, has done a phenomenal job in less than three decades to build one of the strongest arms industries in the third world. The ability of their industry and the quality of their weapons bears close attention from the U.S. This article considers the Brazilian arms industry effect on U.S. strategy toward their country.

First, a careful review of the genesis of the industry will be made. This is very important as it was at the outset the Brazilians set specific goals as the guiding force for the industry. These goals are intact even to this day. To understand the future of the industry, one must understand the foundations.

Second, this paper considers the industry's operation, economic benefits, and customers. This will show how the industry has matured. Especially important is the aspect of how the Brazilian defense industry became independent from foreign arms manufacturers.

The third point addressed will review how the world and market have changed for Brazil. These changes have prompted a need to reorient the industry. Without the bipolar world, a vastly changed Europe, a "new" Russia, an ever turbulent Middle East and Africa,

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[1]Ralph Sanders, Arms Industries: New Suppliers and Regional Security, Washington, D.C.: National Defense University, 1990, pp. 6-7.

and a strengthening China, the market is completely different than it was even 6 years ago. A new stock of industry goals and guidelines have been under study for some time in Brazil.

All of the preceding will lead to the last point, a careful review of the future of Brazil's defense industry. As it continues to survive and compete for position in the arms market, the U.S. (as the major power left in the world) needs to consider how to respond to Brazil. The U.S. has always used military arms as a tool of foreign policy, unlike the Brazilians who have always used the defense industry as a means for strengthening economic independence. This can create circumstances which could lead to a shifting of power in some regions due to increased arms sales. Depending on the shift, the results could be disadvantageous to the U.S. In this, the U.S. should have an interest to provide input on the industry's new direction. The conclusion will stipulate specific actions the U.S. could take to provide assistance to Brazil while protecting U.S. interests.

CHAPTER I

U.S. STRATEGY AND BRAZILIAN ARMS SALES

Pre-1984 U.S. Strategy Toward Brazil

The U.S. took Brazil seriously as the latter rose in prominence in the arms export ability from 1978 to 1988. During this time it became the sixth largest arms exporter for developing nations. It was the second only to Israel among the western nations.[1] In the introduction we saw the point made of there being a lack of clear U.S. policy on the arms manufacturing buildup. Part of the reason for no clear U.S. strategy or policy is that these new arms sources do not challenge the stronger position of the main arms producers in the global market. While there is no challenge economically, there certainly can be effects on the course of international events with the proliferation of the arms.[2]

Even without clear policy, this does not mean the U.S. did not recognize there were national security and economic issues to consider. This was especially valid when one considered the growing interdependence of the U.S. in economic relations among almost all nations.[3] The closest the U.S. came to making a statement that might deal with U.S. objectives in this area was very broad. It addressed the need to maintain security of North America, the Caribbean Basin, and the Panama Canal, and to counter communist influence in the region.[4] As problems or threats to security arose, the U.S. would deal with it. Since no objective

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[1]U.S. Congress, Office of Technology Assessment. Global Arms Trade. OTA-ISC-460. Washington, D.C.: U.S. Government Printing Office, June 1991, p. 9.

[2]Ibid., p. 8.

[3]Ralph Sanders, Arms Industries: New Suppliers and Regional Security, Washington, D.C.: National Defense University, 1990, p. 107.

[4]Ibid., p. 109.

evidence showed third world arms industries threatening the security of North America et al, the U.S. continued to monitor the situation. In the western hemisphere, the U.S. has always closely monitored Brazil, even from the outset of the country's buildup of its industry.

The Brazilian military knew from the outset of their defense industry buildup and exports there could be a foreign policy backlash toward them by other countries. To try to avoid that backlash, the Brazilian military explained it was the industry exporting the arms, not the Brazilian government.[5] This is an interesting explanation considering the Brazilian government used diplomatic means to open foreign markets for arms. Also, the only aircraft manufacturer in the country, Embraer, is still majority owned by its government. Therefore, sales made by Embraer are made by the government. In truth, the government does monitor arms sales. Also, the government does have disqualifying factors for arms sales, such as when a sale would harm Brazil's foreign policy position in the world.[6]

Brazilian Entry to the Arms Export Market

When Brazil decided to build their defense industry, there was no particular military threat driving them. For many third world countries producing arms, only Brazil had enjoyed peace with its neighbors over the previous few decades.[7] Their market entry was not an overnight event. They spent many years planning this and actually began in 1931. The buildup gathered momentum in the 1960s. This was a natural part of their national security strategy which had always been based on economic, political, and military strength.[8]

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[5]Patrice Franko-Jones, The Brazilian Defense Industry, Boulder, Colorado: Westview Press, 1992, pp. 170-171.

[6]Ibid.

[7]Ibid., p. 12.

[8]Franko-Jones, pp. 55-56.

Most important, the main stream of thinking by the Brazilians was that strength in these three areas would provide independence from foreign sources. This strategy played out by realizing a modern, well-equipped army could only be supported by a strong industrial structure. Economic security would be the foundation of political and military security.[9] The planner believed this would also move Brazil toward self-sufficiency by increasing the amount of "Made in Brazil" components in the arms with a possible spin off for exports and civilian goods.[10]

These issues of what formed a strong national security strategy were core to studies, discussions, and research in Brazil's military war colleges. After the 1964 military coup, the subsequent military governments sought a strong economy and increased industrialization to support their strategy. This made sense as one considers that the generals who were leading the government had been through these studies at the war colleges.[11] Politically, they hoped this would give Brazil stronger influence in less developed countries in Latin America, Africa, and Asia. In turn, it might produce political and economic benefits for Brazil.[12]

As previously stated, part of the basic impetus to enter the market was the attraction to develop economic strength. Brazilian arms industry is different from other third world arms producers due to the greater importance of economic decisions made on sales strategy rather than military concerns. Studies conducted on third world arms industries show the

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[9]Ibid., pp. 57-58.

[10]Sanders, p. 13.

[11]Franko-Jones, pp. 58-59.

[12]Raul De Gouvea Neto, "How Brazil Competes in the Global Defense Industry," Latin American Research Review 26, no. 3 (Autumn 1991): 84.

greater reliance on economic criteria, the higher probability of success.[13] One must study the development of industry and other political-military developments throughout the century to fully understand this.[14] The main factor that drove Brazil in this direction was that over the years they saw the West become less reliable as arms suppliers.[15] While the Brazilians began their efforts in the 1960s to establish the industry, it was in the 1970s with "help" from President Carter that spurred them on at a faster rate of development.

In 1976, the U.S. gave Brazil $1 billion in exchange for strategic materials while denouncing Brazilian human rights violations.[16] At this point in time, the amount and capability of military arms sold to Brazil did not assist it to be a regional threat. The U.S. sales and transfers were more of a goodwill gesture than and attempt to help Brazil build a viable military force. Therefore, the U.S. decreased its arms sales and transfers to Brazil due to so-called "human rights" violations. This decrease was a catalyst for Brazil to begin expanding its arms industry. (The Carter Administration ensured a clause was placed in the Arms Export Control Act of 1976 to prohibit arms transfers to countries in violation of international standards of human rights.)[17] To try and appease Brazil, in 1977 the U.S. gave very old war material to Brazil. This was taken as an insult and an abrogation of the U.S.-

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[13]Franko-Jones, p. 4.

[14]Ibid., p. 6.

[15]Sanders, p. 13.

[16]Dominguos Adherbol Olivieri, President, Brazilian Association of Arms Manufacturers (ABIMDE), Text of Address to Air War College Class of 1993 Regional Security Analysis Field Study Class, São José dos Campos, Brazil: 9 February 1993; and Sanders, p. 14.

[17]Franko-Jones, p. 15.

Brazil military cooperation treaty.[18] Brazil then said "No" to any further U.S. aid. At that point, Brazil began to build its own industrial park for its defense industry near São Paulo in São José dos Campos.[19] To improve its standing in the market, Brazil obtained a great deal of arms technology from Europe (and some from Israel, who was also an arms importer to Brazil[20]), especially through licensing agreements. From this, the arms industry began to take off as they now sold items made under license back to the same European countries at lower costs than the Europeans could manufacture them.[21]

To further establish their own defense production capability, Brazil had realized in the 1960s the need to meet specific prerequisites. Parallel to the above named activities, they invested a great deal in manufacturing facilities and research and development (R&D) centers as well as educational facilities. They knew they would have to be able to pay for imports of materials. A diversified industrial base was necessary to meet the needs of a wide spectrum of defense components.[22] Brazil (industry and government) began the diversification process many years before with their high technology industry for civilian products. Brazil entered high technology industry with a large pool of highly skilled workers. They were prime for a defense labor force.[23] This labor force was a product of the technical education facilities.

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[18]Christian Catrina, Arms Transfers and Dependence, New York: Taylor & Francis, 1988, p. 111.

[19]Olivieri; and Sanders, p. 32.

[20]Bishara Bahbah with Linda Butler, Israel and Latin America: The Military Connection, New York: St. Martin's Press, 1986, p. 86.

[21]Franko-Jones, p. 16.

[22]U.S. Congress, p. 123.

[23]Franko-Jones, p. 15.

Brazil's goal of self-sufficiency in arms production was encouraged by the third world nonaligned movement and nationalism. (Many countries have committed resources to internal arms production to ensure an internal supply. They made their resource decisions even when there were indications that the economic potential could have been better placed. India did this for its own glory and to try to avoid too much dependence on the USSR. South Africa built up its arms industry for its survival.) Even though it started with a few licensing agreements, Brazil was not as heavily dependent on this as a source for industry buildup as were other third world countries.[24]

As government and industry continued their planning, they saw "dual-use technology" would provide benefits to the civilian sector as well. Off-the-shelf components from existing industries would be utilized to the maximum extent possible.[25] An example was the use of truck manufacturing facilities in the production of armored personnel carriers. Brazil did not develop arms production capability in order to buy more military capability for itself. Its military expenditures were only about one percent of its GNP in 1985 and have been decreasing as a percentage of the GNP.[26] Again, their primary goal was to strengthen their economic base to be able to provide for its own military hardware.

Brazilian Market Strategy

Four interrelated goals can be identified that Brazilian defense industry actively pursued to ensure it would be a premier arms exporter. First, they sought to keep overhead costs low, thereby driving down the price of their goods. Second, dual-use technology in all they developed was of prime interest to help civilian manufacturing at the same time their

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[24]Ibid., pp. 40-41, 46, 49.

[25]De Gouvea Neto, p. 85.

[26]Sanders, p. 10.

arms industry was strengthening. Third, Brazil provided extremely attractive sales terms. Where other nations attached strings to their sales, Brazil attached none. Finally, and connected to the first, the industry sought to make easy to maintain, easy to use, and the most inexpensive arms for use in the third world environment.

The first goal of lower costs dealt mainly in the marketing efforts since labor costs were already very competitive in the global market. The structure of the Brazilian arms industry gave each defense firm a monopoly on their product. Due to this, Brazil eliminated domestic marketing costs and concentrated their advertising solely on the world market. Through this approach, they were assured of gaining a desired after-profit margin.[27]

Under the second goal (which also helped keep costs of their defense hardware very competitive), the Brazilians decided early on to use as much off-the-shelf equipment that had dual use, i.e., both civilian and military applications.[28] The dual-purpose vision of the Brazilians was deep in their design and development phases by domestic and international technologies serving both military and civilian customers. As an example, Engesa saw automobile technologies benefit from production of tanks and armored personnel carriers. At Embraer, civilian aircraft improved due to improved technologies used for military aircraft. The civilian demand also helped lengthen production runs. In the Brazilian view, this approach would truly add to national security.[29]

Within the third goal, Brazil established purely commercial sales terms, thereby making purchasing by third world governments much easier. With these exports, there were

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[27]Franko-Jones, pp. 29-30.

[28]De Gouvea Neto, p. 85; and Franko-Jones, p. 1.

[29]Franko-Jones, p. 18.

no strings attached (as there are when dealing with the superpowers).[30] In other words, a buyer could resell the equipment to another country.[31] Also important to the "commercial" sales arrangements was that under commercial sales the buyer only had to show he could pay. This undergirded the industry's economic goals, rather than the high political goal of the U.S. and the U.S.S.R. in their arms sales.[32] The fact that Brazil shared affinity of being a third world nation and that they offered on-site technical support and training in the sales terms was a great advantage, too.[33]

The fourth goal showed the Brazilians knew the capabilities of weapons operators and the economic base of their customers. As previously stated, Brazilian weapons are simple to operate and easy to maintain. Standard parts were used to the maximum extent possible to fit on different weapon systems within a class, such as trucks and armored personnel carriers. Engesa even provided some purchasers with technical specifications so they could manufacture their own spares.[34] Engesa's track record showed at the outset of the arms sales competition with other third world country producers, middle technology arms would sell very well due to the simplicity.[35] The approach of low to middle technology hardware would keep Brazil out of direct competition with superpowers. This made Brazil

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[30]De Gouvea Neto, p. 90.

[31]Catrina, p. 114; and Edward J. Laurance, The International Arms Trade, New York: Lexington Books, 1992, p. 46.

[32]Franko-Jones, p. 169.

[33]De Gouvea Neto, p. 91.

[34]Catrina, pp. 113-114; and Sanders, p. 35.

[35]Franko-Jones, p. 1; and Sanders, p. 36.

able to export 80 to 95 percent of their arms production, depending on the type of hardware (missiles to aircraft to armored vehicles to ships).

Through simplicity, low cost, technology transfer possibilities, and no restrictions on the buyer as to resale of the arms, Brazil became very popular in the Middle East, Southeast Asia, and Africa. By the end of 1982, several Brazilian arms firms had conducted exhibitions of their aircraft and ships in and for countries around the world. The results were quite lucrative for increased numbers of contracts.[36] In 1985, Brazil completed a deal with the People's Republic of China to sell 60,000 light trucks with 100 percent technology transfer.[37] In addition to all of these aspects of their market strategy, the Brazilians would place back orders on their own military in order to fill the order of a foreign buyer. This greatly enhanced their position in the world market with third world buyers.[38]

Once established in the market as a viable entity, Brazil worked hard to maintain its position. The next chapter considers government influence in this process. The economic benefits and customer base of the industry are an important focus as well.

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[36]Sanders, pp. 38-39.

[37]Ibid., p. 40.

[38]Franko-Jones, p. 19.

CHAPTER II

MANAGING THE BRAZILIAN DEFENSE INDUSTRY

State Involvement

One goal of the military in arms industrialization was to achieve Brazilian "greatness." This was a somewhat nationalistic orientation, but not founded solely on the people. Rather, there was a greater emphasis on the economic advancements. The private sector agreed with it, as they saw the military as key in standing against guerilla threats and labor problems.[1] With the goals set and industry clearly in concert with the state, industrialization embarked on a buildup in which the government would be a very important partner.

As stated before, Brazil protected their firms from internal competition. They did this by establishing certain products that only one company could manufacture.[2] Involvement became more consistent in July 1975 when, by law, management of all defense programs was placed under a government organization called IMBEL (the Brazilian acronym). IMBEL's purpose was to collaborate with the firms on arms planning and manufacturing, increasing technology transfer, and establishing incentives (technical and financial) for firms wanting to break into the defense industry.[3] With the demise of U.S.-Brazilian cooperation in 1977, the importance of IMBEL jumped dramatically to build up the number of defense firms. By

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[1]Ralph Sanders, Arms Industries: New Suppliers and Regional Security, Washington, D.C.: National Defense University, 1990, p. 30, 31.

[2]Raul De Gouvea Neto, "How Brazil Competes in the Global Defense Industry," Latin American Research Review 26, no. 3 (Autumn 1991): 86.

[3]Ibid.; Patrice Franko-Jones, The Brazilian Defense Industry, Boulder, Colorado: Westview Press, 1992, p. 71-72; and Sanders, pp. 36-37.

1987, IMBEL had played a large part in helping build the privately owned industry to over 650 firms who employed over 150,000 people.[4]

Another government agency, Esabras, was formed specifically to monitor the seven large shipyards in Brazil. This ensured responsibility of monitoring all naval requirements were met, licensing agreements were obtained where there were gaps in Brazilian technology, and foreign coproduction agreements established.[5] Notwithstanding the close hand of IMBEL in the Brazilian defense industry and the actions of Esabras, the overall picture of state intervention in Brazil compared to other third world countries is minimal. The great majority of the companies are private. Instead of working to manage the industry, Brazilian government has sought to complement its industry in the areas research and development, foreign trade credits, financing, and technical education and training.[6] The goal held by both industry and the government has been to improve the economic viability of Brazil in every decision they make. This goal has shaped decisions on the level of technology and product designs to ensure the end product would have a strong economic return.[7] The largest corporation that is mostly state owned is Embraer, the Brazilian Aircraft Company. Of the voting stock, 51 percent is held by the government.[8] A recent example is the forming of a new company called Orbita to manufacture a variety of missiles. The powers behind this company are Engesa (wholly private), Embraer, and IMBEL.

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[4]De Gouvea Neto, pp. 87, 95.

[5]Sanders, p. 34.

[6]De Gouvea Neto, p. 93; and Franko-Jones, pp. 72-73, 74, 75, 81, 85-86.

[7]Ibid., p. 2-3.

[8]Ibid., p. 1.

The state and defense firms worked closely on arms sales. The only time the state intervened was to supplement, not replace or dictate to industry on their market activities. The structure of Brazilian defense industry was based on cooperation between public and private sectors. Industry was not characterized by exclusive state ownership. To bring a new technology into the sector, the state promoted specific technological development within the industry. The state also promoted international marketing and industrial expansion of suppliers serving the main defense companies. When companies did not have the capital available for costly development, the military technology centers provided the necessary research for the companies. When there was a need to obtain technology from other countries, the Brazilian government would use its bargaining power to bring the transfers to fruition. Even Brazilian diplomatic posts assisted in this effort.[9]

State and industry performed different tasks, but they were complementary,[10] always looking for the best way to complete a task as a team, rather than upon patterns of ownership. In this way, the state has many times been the entrepreneur (not regulator) in the arms industrialization.[11]

Economic Benefit of Arms Trade

Mr. Olivieri stated five benefits defense industry has sought for Brazil. First, industry has obtained high technology expertise. Second, the defense technology they have developed also has had direct application in the civilian sector. Third, subcontractors have obtained indirect benefits for civil use. Fourth, support for continuously improving the technology has been established. Last, there have been many direct social benefits through

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[9]Ibid., p. 3.

[10]Ibid., p. 65.

[11]Ibid.

improving education and health care due to a greater economic base to provide these.[12] Part of the technological expertise has been developed locally. There has also been a great amount of expertise attracted from offshore. This "technological mind" transfer has been quite effective. Many of these offshore thinkers are now Brazilian citizens.[13]

Brazil has the highest export growth rates in military hardware within the group of newly industrialized countries who are also arms producers.[14] The following bears this out. A strong economy was a primary goal for Brazil. To establish this strength, an increase in foreign exchange reserves would be most helpful, but was not the motivation in every case. For sales to Iraq, Brazil traded arms for oil. In the 1980s, Brazil imported at least 40 percent of its oil, 30 percent of which came from Iraq. While Brazil did not receive hard currency from these arms sales, they did not lose any from their own reserves in order to buy oil. This resource weakness of Brazil provided an impetus to expand industrially through sales to oil rich countries.[15] The government set broad foreign policy goals on debt reduction and offsetting the burden of oil imports that could be met through high volume arms sales.[16] However, the international arms embargo on Iraq damaged the export viability of Brazil's

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[12]Dominguos Adherbol Olivieri, President, Brazilian Association of Arms Manufacturers (ABIMDE), Text of Address to Air War College Class of 1993 Regional Security Analysis Field Study Class, São José dos Campos, Brazil: 9 February 1993.

[13]Christian Catrina, Arms Transfers and Dependence, New York: Taylor & Francis, 1988, p. 112.

[14]De Gouvea Neto, p. 91.

[15] De Gouvea Neto, p. 90; and Franko-Jones, pp. 14, 211.

[16]Ibid., p. 139.

defense industry.[17] Brazil also purchased German submarines in exchange for $200 million of iron ore.[18]

When compared to major U.S. defense firms, the total production of Brazilian arms does not amount to very much. Their exports for major conventional weapons in 1987 were $648 million. While a sizable amount for a third world country, it was only .8 percent of the world trade in major conventional weapons.[19]

Brazil traveled a great distance in the few years of arms industrialization. Of its arms exports, at least 75 percent are now completely produced in country down to the last component.[20] (Different authors disagree about the amount of Brazilian domestic content in their arms exports. One document states 99 percent of the content is domestically manufactured.[21] This author could not find a closer range. However, it can be said that even 75 percent is a great amount when considering how much the industry has developed in 20 years.) Couple this with the factor that from 1967 to 1987 Brazil's market share increased, while the share for the U.S., U.S.S.R., and U.K. decreased.[22]

Customers

All of the statistics can be boiled down to a few numbers for third world arms

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[17]U.S. Congress, Office of Technology Assessment. Global Arms Trade. OTA-ISC-460. Washington, D.C.: U.S. Government Printing Office, June 1991, p. 126.

[18]De Gouvea Neto.

[19]Franko-Jones, pp. 28-29; and U.S. Congress, p. 6.

[20]Sanders, p. 32.

[21]U.S. Congress, p. 126.

[22]Franko-Jones, pp. 36-38.

producers. Due to its vast natural resources, Brazil ranks highest among developing nations, second as an arms producer, third largest in size and diversification of its industry, and first in exports.[23] Brazil exports to more third world nations than any other developing country. It also includes as its customers the highest number of first world states purchasing from a third world exporter.[24]

However, as goes the global market, so go Brazilian arms sales. When the global market needs declined, the Brazilian decline in exports declined in parallel.[25] Iraq and Libya were Brazil's biggest customers from 1983 to 1989 for all types of arms (aircraft, armored personnel carriers, rockets, guidance systems, et al).[26] These sales have fallen, though, be it from the embargo on Iraq or the oil sales slump for Libya. The Avibras (manufacturer of guidance systems and rockets) marketing director stated his company must export or die. About 90 percent of their sales are exports. This sharply declined when a truce was called between Iran and Iraq.[27]

Using Embraer as an example, the company always oriented their strategy toward export. In 1975, its first aircraft sales were profiled by only 6 percent exports; but by 1978, this had climbed to 33 percent and by 1987, over 70 percent of its yearly sales were exports. They sought multiple customers in every region of the world.[28] Brazil has also sought to take

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[23]Ibid., pp. 38-39.

[24]Ibid., p. 36.

[25]Ibid., p. 144.

[26]Ibid., pp. 142-143.

[27]Ibid., pp. 165-166.

[28]Ibid., pp. 147-148.

advantage of regional issues in order to increase its sales, too. Shortly after the Falklands War, the U.K. decided to purchase Embraer's Tucano as trainers. Ms Patrice Franko-Jones looks at the U.K. decision as having bought an ally against Argentina.[29]

Going back to Avibras, the company must have outside funding. This is especially important considering their primary customers are third world developing nations who cannot afford large quantities of arms. Low quantities do not contribute to increased development of the Brazilian systems.[30] So Avibras has received a great deal of foreign funding. Development of the Astros II multiple rocket launcher system was partially funded by Saudi Arabia. The main user of the weapon was Iraq who still provided oil for arms, not investment capital. The country received 86 of these systems between 1982 and 1989 along with 13 fire control radars for the system.[31] Saudi Arabia is also funding part of the development of a Brazilian Exocet-type missile.[32]

Decisions to not sell arms to a given country have been made mainly because of external pressures. Only four nations are specifically restricted from receiving Brazilian arms: Israel, U.S.S.R., Taiwan, and Cuba. Decisions on singling out these four countries are from pressures by the U.S. (specifically for the U.S.S.R. and Cuba) and from other customers (in the case of Israel, the oil-rich Middle East clients; and in the case of Taiwan, the People's Republic of China).[33] Similar pressures were put on Brazil to cease their exports to Iraq at

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[29]Catrina, p. 111; and Franko-Jones, pp. 155, 157.

[30]U.S. Congress, p. 124.

[31]Ibid., p. 19.

[32]Catrina, p. 112.

[33]Franko-Jones, p. 172.

the outset of the Iran-Iraq war. However, Brazil continued their deliveries because they had signed the contract with Iraq prior to the outbreak of the war. They wanted to show their credibility as an unbiased and guaranteed source of arms.[34] Of course, the economic needs played a great part in the decision for them, too.

Brazil did cease their exports to Iran during their war with Iraq. However, Libya would ; urchase the spare parts and resell them to Iran. With no restrictions on resale, Brazil made no move to stop Libya.[35] It also appears to be hypocritical by Brazil to stop sales to Iran, but not Iraq. Surely, Brazil knew the transfers could be made to Iran through Libya, thereby not harming its sales.

The performance of the Brazilian armored car and personnel carrier sold to Iraq received great press due to their effectiveness and dependability on the battlefield. Orders increased. Other products were purchased, too, simply because they were associated with Brazilian defense industry.[36]

After several years of success, Brazil continued to plan to expand the quantity of arms, diversification of technologies, and a broader customer base. Little did they know that sudden changes in the world balance of power, dramatic events in the Middle East, and a world wide economic recession would stem the flow of arms orders. This was to have a damaging result on the Brazilian arms industry.

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[34]Ibid., p. 173.

[35]U.S. Congress, p. 127.

[36]Sanders, p. 35.

CHAPTER III

WORLD CHANGES

Changes in the World Order

By the mid-1980s the entire international arms market had changed greatly as a result of the downward shift in the global economy. This resulted in fewer sales.[1] The Iran-Iraq War had ended and new orders dried up.[2] The U.S. decreased imports from Brazil due to the potential of a retroactive tax being imposed on Brazilian imports.[3] From 1987 to 1988, not only did these events have a great impact on the arms sales, but lower oil prices had a negative effect on sales to some of Brazil's best customers in the Middle East. As an example, by May 1989, Iraq owed more than $100 million to Avibras, and had owed this for more than a year.[4] Even Libya cut its purchases from about $750 million to $300 million in 1984 due to falling oil prices.[5] While payments should have been made to Brazil in oil, the lack of payment caused Brazil to purchase oil elsewhere and use part of their foreign currency reserves. Brazilian industry had to write off the Iraqi debt.

In 1990 the Brazilian arms industry hit a deep crisis as even greater changes occurred in the political and economic makeup of the world. The crisis was exacerbated by the

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[1]Edward J. Laurance, The International Arms Trade, New York: Lexington Books, 1992, p. 97.

[2]Patrice Franko-Jones, The Brazilian Defense Industry, Boulder, Colorado: Westview Press, 1992, p. 190; and Laurance, p. 97.

[3]Franko-Jones, p. 190-191.

[4]Ibid., p. 191; and Ralph Sanders, Arms Industries: New Suppliers and Regional Security, Washington, D.C.: National Defense University, 1990, p. 97.

[5]ibid., p. 98.

industry trying to reach beyond its existing capabilities to produce equipment which demanded sophisticated electronic subsystems. Military research centers tried to assist, but without significant assistance since their budgets were severely cut. The decline of communism caused marked changes in the world arms market, mainly in reducing sales opportunities. The Russians began flooding the market with arms at give-away prices. Most of the normally big buyers, Iraq, Iran, and Libya, went broke (with no financing available) or were outlawed to receive arms sales.[6]

Considering the growing instability in many regions of the world, third world countries will most likely try to bolster their military structures by either domestic arms production or importing arms.[7] The latter scenario is one which Brazil hopes to play a great part in. So what is Brazil looking toward in a new market?

Market Changes for Brazilian Defense Industry

Brazil was once the sixth largest arms distributor in the world. By the last official count, they are now eleventh. They will most likely be farther down the list by the end of 1993.[8] The changes in the market were indicated by four main areas. First, orders from the third world customers decreased greatly. Second, the military research centers could not assist with additional R&D because of budget cuts. Third, emerging industries in third world countries were becoming viable competitors. Finally, U.S. sales to Brazil's customers increased as these countries desired higher technology in their arms.

Given decreased sales opportunities, the Brazilian condition resembles that of other

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[6]Thomas Solitario, Major, USAF, Written response to author's questions on Brazilian defense industry. São Paulo, Brazil: Defense Attache Office, 21 January 1993.

[7]Laurance, p. 99.

[8]Solitario.

countries in hard economic times. Several defense acquisition programs have been stretched out in the post-Cold War environment due to a lack of government funding. Arms sales could not fund development programs and the military budget was drastically cut in addition, thereby cutting a second source.[9] With the decrease in sales and defense budgets, the Brazilian defense industry is looking to their own government to provide support due to decreased market opportunities.[10]

As if these problems were not enough, another factor in the market with which to contend has been the increased competition from China, India, Pakistan, and North Korea as they have built their arms industries.[11] China especially has made great inroads to Brazil's most lucrative market, the Middle East.

The fourth problem for Brazil to deal with has been the increase in sales by the U.S. In 1988, the U.S. sales to the third world increased by 66 percent with the Middle East the largest market receiving two-thirds of all weapons delivered. (With a tightening defense budget, the U.S. is also motivated to increase its international sales efforts.)[12]

What should Brazilian industry do? While many third world arms industries cut back on long-term investments in times of economic declines, Brazil searches for new ways to

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[9]Raul De Gouvea Neto, "How Brazil Competes in the Global Defense Industry," Latin American Research Review 26, no. 3 (Autumn 1991): 101-102; and Franko-Jones, p. 4.

[10]Dominguos Adherbol Olivieri, President, Brazilian Association of Arms Manufacturers (ABIMDE), Text of Address to Air War College Class of 1993 Regional Security Analysis Field Study Class, São José dos Campos, Brazil: 9 February 1993.

[11]Franko-Jones, p. 190.

[12]Ibid., p. 193; and U.S. Congress, p. 12.

obtain investment capital.[13] This is requiring changes to their goals which have been oriented toward economic self-sufficiency for many years.

Potential Goal Changes

Prior to the demise of the East-West conflict, Brazilian defense industry was very hopeful about the future. Mr. José Luiz Whitaker Ribeiro, president of Engesa, stated in 1985, "There's always money for arms. In two or three years' time we'll overtake Britain and France as exporters, and the market is infinite."[14] Four years later Engesa was working hard on a new strategy to survive.

Brazil has adopted three main pillars in its attempt to solve the malaise in its defense industry. First, it recognizes the need to produce higher technology arms. This does not mean it is abandoning the low and middle technologies; but it will complement its present suite of arms with higher technology to compete in the global market. Second, Brazil is seeking more joint ventures to help spread development and production costs between firms, both inside and outside of the country. Third, industry and government have sought foreign investment as a means to help shore up their lagging industry. Each of these three pillars are set are explained in more detail below.

To try and jump ahead of the competition, Brazil has been trying to implement ambitious plans to move to high technology. This is a big change from their original strategy of "make it simple, make it cheap."[15] They are also developing specialized arms such as Engesa's X-30 tank which is specifically designed for climates and topographies in South and

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[13]Sanders, p. 100.

[14]Christian Catrina, Arms Transfers and Dependence, New York: Taylor & Francis, 1988, p. 113.

[15]Franko-Jones, p. 191; and Sanders, p. 37.

Central America. This tank operates very well at high altitudes, needed in several Latin American countries.[16] (Also, a Brazilian tank reportedly out-shot the U.S. M1A1 Abrams tank in Saudi Arabian trials.)

Definitely, Brazil believes it must raise the level of technology in its products. But under current domestic fiscal constraints, this will be an impossibility unless they can have a "marriage" with U.S. industry who can transfer technology at a reasonable price.[17] Brazil will have to increase technology in their weapons to remain an attractive producer in the world market.[18] It is following this course. Industry is also trying to pool resources domestically to cope with a changing market. This amounts to in-country joint ventures. As shown in the previous chapter, in 1987 Engesa, Embraer, and IMBEL joined forces to form Orbita, a company that is going to produce a wide array of missiles.[19] This shows a great deal of government input to strengthen the arms industry--Embraer is 51 percent government owned and IMBEL is a government agency. Yet, defense industrialization has slowed drastically in Brazil. Unless key sales are made, the industry's future is very uncertain.[20] The scope of the R&D goes beyond weapons to space technologies. Brazil put their first weather satellite into space in February 1993. They are also building their own launch facilities and continuing research in missile technology. (While up front this is given the

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[16]ibid., p. 36.

[17]Franko-Jones, pp. 207-208.

[18]Sanders, pp. 100, 105-106.

[19]De Gouvea Neto, p. 98.

[20]Franko-Jones, p. 4.

appearance of space exploration, they are opening the doors to ballistic missile technology.)[21]

Foreign subsidiaries have found it lucrative to invest in Brazil. Special incentives have been made by government and industry to bring more foreign investment into the defense industry and thereby bring in new technologies, too. As of 1987, 159 multinational companies were involved in the Brazilian arms industry.[22]

Brazil's defense industry is not standing still. They are searching for opportunities and exploiting them as best they can. The U.S. has seen Brazil as a minor competitor in the past. With both facing similar problems in the days ahead, what should U.S. policy toward Brazil be in this time of uncertain budgets and growing world instability? The U.S. must decide to work with Brazil or to try and squeeze them out as a competitor. The next chapter will consider this.

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[21]Sanders, p. 101.

[22]De Gouvea Neto, p. 98.

CHAPTER IV

CONCLUSIONS

Future of Brazilian Defense Industry

Even before the Gulf War, Brazilians were looking toward production of higher technology arms. The results of the Gulf War further solidified that outlook as it showed the effectiveness of high technology. This will not preclude the need for simple arms such as trainer aircraft and multiple launch rockets. Even small quantity purchases would help Brazil's industry at this point, but it won't be long lived as the needs could be filled rapidly.[1]

Whatever the future demand, Brazilian defense industrialists (and governmental leaders) will maintain the vision that a strong defense industrial base is a great contribution to a nation's sovereignty.[2] Brazil is finding creative ways to maintain that industry. Three specific ways Brazil is stepping up to the challenge, is to continue privatization of government-owned firms, use the defense industry to meet demands in the civilian market, and seek more joint ventures with foreign firms.

Privatization Efforts

Many governments of developing nations believe the state must have direct ownership of defense industry to ensure proper management of their programs.[3] Brazil, on the other hand, at the leading edge of the newly industrialized nations with great managerial and

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[1]Patrice Franko-Jones, The Brazilian Defense Industry, Boulder, Colorado: Westview Press, 1992, pp. 201-202.

[2]Dominguos Adherbol Olivieri, President, Brazilian Association of Arms Manufacturers (ABIMDE), Text of Address to Air War College Class of 1993 Regional Security Analysis Field Study Class, São José dos Campos, Brazil: 9 February 1993.

[3]U.S. Congress, Office of Technology Assessment. Global Arms Trade. OTA-ISC-460. Washington, D.C.: U.S. Government Printing Office, June 1991, p. 124.

technical abilities, saw the need some time ago to privatize to the maximum extent possible.

By 1992, Engesa's financial position reached the point of almost driving the company into bankruptcy. Mr. Collor, president of Brazil at the time, wanted to see Engesa remain solvent, but without nationalization or financial assistance from the government or foreign control.[4] (Nationalization would be the response of most developing nations.) With the recent departure of Mr. Collor and the entry of President Franco, privatization's future is uncertain. Mr. Franco is more populist (state control oriented) by political background. While he has allowed some privatization to continue, he is not convinced of the need to privatize as a general rule. Because of this he put Embraer's privatization program on hold. Mr. Silva, Embraer Chief Executive Officer, believes that without privatization, progress for the company will be very slow as they work through the state system in everything they do.[5]

Civilian Oriented Market

Defense companies are also seeking greater connectivity with civilian markets. Embraer's primary strategy for recovery is to strengthen civilian product lines by producing parts for other international aircraft companies. British Airways and McDonnell-Douglas are examples of two ongoing civilian programs. While these may be small programs, they are a positive move into the western market. Also, Embraer has a coproduction arrangement with Argentina for a 19-seat commuter plane that would operate superbly in the Latin American environment from tropics to mountain tops. This strategy showed an initial

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[4]Franko-Jones, p. 203.

[5]Ozires Silva, Chief Executive Officer, Embraer, Discussion with Air War College Class of 1993 Regional Security Analysis Field Study Class, São José dos Campos, Brazil: 9 February 1993.

increase in profits in 1989 of 34 percent.[6]

This new strategy could be a bit more challenging for companies like Engesa and Avibras who haven't had as direct connection with civilian products as Embraer. However, Avibras is using their guidance and communications technology to begin manufacturing antennas for home televisions.[7] Avibras is also shifting to civilian aircraft radars from missile guidance systems.[8] Engesa is using its factory lines to produce tractors, buses, trucks, and railroad cars where they once manufactured armored personnel carriers.[9] Companies that have been manufacturing small arms for military use are now converting to small arms for civil use, i.e., police forces.[10]

With the drive for higher technology arms having begun in the 1980s, the Brazilian defense industry strongly drove the buildup of a computer industry within the country. Industrialists see indigenous computer production as inseparable from future success for the arms industry.[11] Here we see an example of a need being filled through domestic expertise and enterprise rather than imports. This also greatly aids domestic industry.

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[6]Franko-Jones, p. 204; and Raul De Gouvea Neto, "How Brazil Competes in the Global Defense Industry," Latin American Research Review 26, no. 3 (Autumn 1991): p. 88.

[7]Franko-Jones, p. 205.

[8]Olivieri.

[9]Franko-Jones.

[10]Olivieri.

[11]De Gouvea Neto, p. 100.

Joint Ventures with Foreign Firms

A final area Brazilian industry has increasing involvement with is offshore joint ventures. Advantages in joint ventures can be great when properly approached. Risk is shared and technical expertise is pooled between companies. Each company is also given access to its partner's technology and capital resources. Finally, when the right team is built, marketing costs can be shared and equally good reputations synergistically help both companies to bring in more business.[12]

Brazilian industrialists and politicians see the need for internationalizing arms manufacturing since self-reliant industries are becoming impossible. Former President Collor led this effort in 1990 by pushing for the greatest increase in joint ventures with foreign arms firms.[13] A highly successful program for Embraer has been the joint venture with Aeritalia and Aeromacchi (both of Italy) in coproducing the AMX fighter.[14] The Brazilian Air Force and Embraer are able to manage this program because of reduced development costs to both through the joint venture.

A joint venture between Embraer and McDonnell-Douglas on the MD-11 aircraft has divided development risk and broadened the market for the eventual aircraft sales.[15] Also, General Dynamics has approached Embraer to manufacture composite materials for wings and fuselage for the F-16.[16] Presently, Embraer has also teamed with Northrop to compete

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[12]U.S. Congress, p. 125.

[13]De Gouvea Neto, p. 99; and Franko-Jones, pp. 205-206.

[14]Ralph Sanders, Arms Industries: New Suppliers and Regional Security, Washington, D.C.: National Defense University, 1990, p. 13.

[15]Franko-Jones, p. 157.

[16]Ibid., p. 209.

for the award in early 1994 of the Joint Primary Aircraft Training System (JPATS) for the U.S. Air Force and Navy. This joint venture is proposing the Super Tucano as the best selection for the JPATS program.

Embraer is working in other countries, too, such as with Short Brothers of Ireland to develop the EMB-312 Tucano turboprop (an existing Embraer airframe) for U.K. training requirements. In Egypt, another joint venture program involves the assembly of components by the Arab Organization for Industrialization. Only an advanced industry such as Brazil's could take on the challenge of a venture such as this with an underdeveloped country and see it through to success.[17]

While Embraer presently has the lion's share of joint ventures, there are other companies busy with these type agreements, too. The two largest of the seven Brazilian shipyards have joint ventures with Japan and The Netherlands.[18] They are producing small ships for the navies of all three countries.

U.S. Strategy in Response to Changes in Brazilian Defense Industry

With the decrease in arms sales in the past 3 years and the commensurate decrease in defense expenditures in all countries, defense industries in newly industrialized countries will fiercely compete to keep their industries alive. This will precede offers for transfers of technology to undeveloped nations and proliferation of modern weapons. This could cause even greater destabilization in the world.[19] Others argue that arms proliferation will have a stabilizing effect as a deterrent. Whatever the case might be, the U.S. prefers for all countries to act rationally to contribute to stability. History shows irrational actors have

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[17]De Gouvea Neto, p. 88.

[18]Sanders, p. 34.

[19]Ibid., p. 108; and U.S. Congress, p. 3.

created adverse conditions for U.S. interests.[20]

Meanwhile the U.S. is planning that small wars and insurrections may be part of our foreseeable future. The challenge for the U.S. is to determine how to contribute to stability through arms sales as all countries (big and small) will continue to buy them regardless of U.S. desires.[21] As a self-appointed rational actor, the U.S. sees itself as the only seller of arms that could carry out sales that will contribute to world stability.

In March 1984 President Reagan oversaw the signing of an understanding of military cooperation between Brazil and the U.S. This reversed the policy of President Carter to deny arms due to human rights violations. Still, some members of Brazil's military were concerned. They saw this as an open door for the U.S. to place restrictions on Brazil's arms sales.[22] To date, that concern has been unfounded.

Another point to be factored into U.S. thinking, is that sporadic militarism fueled by growing nationalism will be strengthened by the availability of the proliferated weapons.[23] While there have been some collaborative programs and joint ventures taking shape between U.S. and Brazilian industry, the British have been doing a great deal more.[24] Of course, as mentioned earlier in this paper, this is due to Brazil's proximity to Argentina and the desire of the U.K. to continue to exert influence over Argentina on the issue of the Falklands/Malvinas.

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[20]Sanders, pp. 108, 114.

[21]Ibid., p. 114.

[22]Sanders, pp. 32-33.

[23]U.S. Congress, p. 4.

[24]Franko-Jones, p. 206.

One reason the U.S. has not given much attention to Brazilian industry is because of preoccupation with the changes in Eastern Europe. More U.S. attention to South America, and especially Brazilian defense industry, could greatly improve bilateral relations and aid regional stability.[25] The attention to give Brazil is not meant to be like that given in April 1988. Then, several Western European nations and Canada led by the U.S. signed an agreement to establish embargoes on the transfer of military rocket technology to newly industrialized countries such as Brazil. Brazil's advertised desire to obtain these technologies was for its space program. Without the technology, the program will be seriously delayed.[26]

With the above as a scenario, where does this put the U.S. in its future relationship with Brazil? Many U.S. defense companies are in financial trouble and cannot continue to develop new technologies with decreased budgets.[27] The same holds true for companies in newly industrialized countries such as Brazil. One way the U.S might control proliferation is to enter into joint ventures with Brazilian industries. As part of the agreements, the U.S. could establish controls on the transfer of the technology and sales of weapons thereby stabilizing the potentially more unstable global environment. This would also assist in spreading development costs for both countries during times of defense budget decreases. Brazil would benefit greatly from this as they would receive new technologies.

Some in members of the U.S. Congress believe this will only serve to displace U.S. defense subcontractors.[28] However, without this approach the subcontractors will not be

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[25]Ibid., pp. 208-209.

[26]De Gouvea Neto, p. 101.

[27]U.S. Congress, p. 9.

[28]Ibid., p. 26.

around anyway as the programs would be completely cut due to the decreasing defense budgets. The share picked up by a country such as Brazil would be that which we would cut due to the decreased budget.

The U.S. needs to actively seek ways to be the stronger partner in joint ventures with Brazilian defense industry. Not only would this aid U.S. defense firms, but it has the potential of contributing to regional stability in the western hemisphere and stability in other regions due to a potential control of arms flow. Brazil needs capital. The world needs stability. The U.S. should not miss this as an opportunity to meet two goals--hemispheric stability and continued defense programs.

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